

What is claimed is:

1. A high-frequency amplifying device for amplifying a high-frequency signal with a plurality of stages of amplifying elements, comprising:

5 a high-frequency amplifying unit having a plurality of the amplifying elements for amplifying the input high-frequency signal;

 a measuring circuit for measuring amplitude of said input high-frequency signal; and

10 a bias control circuit for continuously controlling a bias applied to each of said amplifying elements according to value of said amplitude measured by said measuring circuit.

2. The high-frequency amplifying device according to claim 1,
15 wherein said bias control circuit has a current adding circuit for outputting a current having a value corresponding to the amplitude measured by said measuring circuit, and a bias applying circuit for applying a bias corresponding to the sum of current output from the current adding circuit and a predetermined
20 reference current to the plurality of amplifying elements.

3. The high-frequency amplifying device according to claim 2,
wherein said bias control circuit has a detection adjusting circuit for setting value of a current conducted according to
25 said amplitude of the high-frequency signal when said measuring circuit measures the amplitude thereof.

4. The high-frequency amplifying device according to claim 2,
wherein said current adding circuit has a current mirror circuit
30 for allowing a current having a value corresponding to the

amplitude measured by said measuring circuit to conduct into one end thereof and according to the current, outputting another current set based on a ratio between junction areas of the current mirror circuit and a source voltage from the other end thereof.

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5. The high-frequency amplifying device according to claim 2, wherein said bias applying circuit has an internal amplifying element for conducting the current output from the current adding circuit and the predetermined reference current, and said
10 internal amplifying element and the plurality of amplifying elements of said high-frequency amplifying unit constitute a current mirror circuit.

6. The high-frequency amplifying device according to claim 1,
15 wherein said bias control circuit has a current subtracting circuit for inputting thereto a current having a value corresponding to the amplitude measured by said measuring circuit, and a bias applying circuit for supplying the current to the current subtracting circuit and applying a bias corresponding
20 to a difference between a predetermined reference current and said current to the plurality of amplifying elements.

7. The high-frequency amplifying device according to claim 6, wherein said bias control circuit has a detection adjusting
25 circuit for setting a value of current conducted according to the amplitude of high-frequency signal when said measuring circuit measures the amplitude thereof.

8. The high-frequency amplifying device according to claim 6,
30 wherein said current subtracting circuit has a current mirror

circuit for allowing a current having a value corresponding to the amplitude measured by said measuring circuit to conduct into one end thereof and according to the current, inputting another current set based on a ratio between junction areas of the current mirror circuit and a source voltage from the other end thereof.

9. The high-frequency amplifying device according to claim 6, wherein said bias applying circuit has an internal amplifying element for conducting the remaining current obtained by subtracting the current supplied to the current subtracting circuit from the predetermined reference current, and

the internal amplifying element and the plurality of amplifying elements of said high-frequency amplifying unit constitute a current mirror circuit.

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10. The high-frequency amplifying device according to claim 1, wherein said measuring circuit is connected in parallel with said high-frequency amplifying unit.

20 11. The high-frequency amplifying device according to claim 3, wherein said measuring circuit, said current adding circuit and said detection adjusting circuit are connected in parallel with said high-frequency amplifying unit.

25 12. The high-frequency amplifying device according to claim 7, wherein said measuring circuit, said current subtracting circuit and said detection adjusting circuit are connected in parallel with said high-frequency amplifying unit.

13. The high-frequency amplifying device according to claim 1, wherein said measuring circuit has a detector circuit

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connected in series with said high-frequency amplifying unit, for passing the high-frequency signal to said high-frequency amplifying unit and detecting the high-frequency signal.

- 5 14. A high-frequency amplifying device for amplifying a high-frequency signal with a plurality of stages of amplifying elements, comprising:

a high-frequency amplifying unit having a plurality of the amplifying elements for amplifying the input high-frequency
10 signal;

a measuring circuit for measuring the amplitude of input high-frequency signal; and

a plurality of bias control circuits for respectively independently controlling continuously biases applied to the
15 respective amplifying elements according to the value of amplitude measured by said measuring circuit.

15. The high-frequency amplifying device according to claim 14, wherein each of said bias control circuits has a current
20 adding circuit for outputting a current having a value corresponding to the amplitude measured by said measuring circuit, and a bias applying circuit for applying a bias corresponding to the sum of current output from the current adding circuit and a predetermined reference current to said each
25 amplifying element.

16. The high-frequency amplifying device according to claim 14, wherein each of said bias control circuit has a current
30 subtracting circuit for inputting thereto a current having a value corresponding to the amplitude measured by said measuring

circuit, and a bias applying circuit for supplying the current to said current subtracting circuit and applying a bias corresponding to the difference between a predetermined reference current and the current to said each amplifying element.

17. The high-frequency amplifying device according to claim 14, wherein each of said bias control circuit of a predetermined number of stages on the front side, of said plurality of bias control circuits has a current subtracting circuit for inputting thereto a current having a value corresponding to the amplitude measured by said measuring circuit, and a bias applying circuit for supplying the current to the current subtracting circuit and applying a bias corresponding to the difference between a predetermined reference current and the supplied current to said each amplifying element, and each of said remaining bias control circuits on the rear side has a current adding circuit for outputting a current having a value corresponding to the amplitude measured by said measuring circuit, and a bias applying circuit for applying a bias corresponding to the sum of current output from the current adding circuit and a predetermined reference current to said each amplifying element.